Source Water Assessment Program (SWAP) Report For New Boston Nursing Home

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

- Inventory land uses within the recharge areas of all public water supply sources;
- Assess the susceptibility of drinking water sources to contamination from these land uses; and
- Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program

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Table 1: Public Water System (PWS) Information

PWS NAME	**New Boston Nursing Home**
PWS Address	**P.O. Box 216**
City/Town	**Sandisfield, Massachusetts**
PWS ID Number	**1260001**
Local Contact	**Ellie Bauer, Administrator**
Phone Number	**413-258-4731**

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well #1	1260001-01G	218	536	Moderate

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential sources of contamination, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:
1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

The New Boston Nursing Home, located in the rural town of Sandisfield, is home to approximately 55 men with about 40 staff. The facility is served by an on-site septic disposal system. Well 01G is reportedly, a 174-feet deep, 6-inch diameter gravel developed well, constructed in 1968. However, based on the depth of the well, it is believed that the well actually utilizes the bedrock aquifer. The safe yield was not determined at the time of construction, but the average daily water consumption at the facility is 6,500 gallons per day. The Zone I and Interim Wellhead Protection Area (IWPA) radii are 218 feet and 536 feet, respectively. The Zone I is the protected area

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

immediately surrounding the wellhead while the IWPA provides an interim protection area for a water supply well when the actual recharge area has not been delineated. These protective radii have been calculated based on the available metered data; however, the actual recharge area to the well may be significantly larger or smaller than the IWPA.

The well is located just north of the confluence of two rivers in an area mapped as a shallow, unconfined sand and gravel deposit that parallels both the Clam River and the west branch of the Farmington River. There is no record of a confining, protective clay layer in the vicinity of the well. Wells located in these geological conditions are considered to have a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration from the surface.

The well serving the facility has chlorine (sodium hypochlorite) added as a disinfectant. For current information on water quality monitoring results, please contact the Public Water System contact person listed above in Table 1 for a copy of the most recent Consumer Confidence Report. Please refer to the attached map of the Zone I and IWPA and Table 1 for additional information regarding the location of the well and activities within the protection areas.

2. Discussion of Land Uses in the Protection Areas

There are few activities within the drinking water supply protection areas that are potential sources of contamination.

Key issues include:

1. **Nonconforming activities in the Zone I;**
2. **Septic System;**
3. **Low-density Housing;**
4. **Transportation Corridors; and**
5. **Improper storage of hazardous household materials.**

Table 2: Table of Activities within the Water Supply Protection Areas

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Parking lots, and Transportation Corridors	Yes	Yes	Moderate	Limit road salt usage and provide drainage away from wells
Septic System	Yes	Yes	Moderate	See septic systems brochure attached
Low density Housing	Yes	Yes	Moderate	Supply residents with BMP guidance; refer to septic system brochure
Floor Drain in boiler room	Yes	Yes	Moderate	Bring floor drains into compliance with Department regulations. Consult UIC coordinator.
Storage of household hazardous materials	Yes	Yes	Moderate	Provide secondary containment
Electrical Transformers	Yes	Yes	Moderate	Request information regarding PCB in MODF from your electric company
Nursing Home	Yes	Yes	Low	Nonconforming Zone I

*** -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.**

The overall ranking of susceptibility to contamination for the well is moderate based on the presence of moderate threat land uses or activities in the Zone I and IWPA, as seen in Table 2.

1. Nonconforming Zone I – Currently, the water supplier does not own or control the entire Zone I area. Please note that systems not meeting DEP Zone I requirements for ownership or control, must get DEP approval and address Zone I ownership prior to increasing water use or modifying systems. The Zone I area includes the New Boston Nursing Home, septic system leach field, a private residence, State Route 57, and parking lots for the nursing home and New Boston Inn. It was noted during the site visit that the wellhead is below grade and the cap was not a sanitary well cap.

Recommendations:

- ✓ Control access to the wellhead area and make every effort to acquire Zone I control or ownership.
- ✓ Replace split well cap with a watertight, sanitary seal cap and raise wellhead above grade.
- ✓ Use Best Management Practices for handling treatment chemicals and vehicles used to access the area. Do not use or store pesticides, fertilizers or road salt within the Zone I.

2. Septic System -The Zone I contains components of the nursing home's septic system. The IWPA contains the septic system leach field for the entire nursing home, residences and other small businesses. The most significant threats from a septic system are from lack of maintenance and improper disposal of non-sanitary waste.

Recommendations:

- ✓ Provide staff and area residents with information about proper maintenance and disposal practices for septic systems. Septic system components should be located, inspected, and maintained on a regular basis. Refer to the attachments for more information regarding septic systems.
- ✓ Upgrade and maintain the facility's system as required.
- ✓ Avoid septic tank cleaners, especially those with acids and solvents.

3. Low-density Housing - The Zone I contains a residence with associated parking and septic tank. Potential threats from residential users are mismanagement of household waste, improper disposal of non-sanitary waste, and lack of septic system maintenance.

Recommendations:

- ✓ See septic system recommendations.
- ✓ Monitor roadside for spills and leaks.
- ✓ Supply residents with information about BMPs for household hazardous waste management and lawn care.

4. Transportation Corridors - State Routes 57 is located within the Zone I and both Routes 57 and 8 are within the IWPA. Accidental leaks, spills, and road salt are some of the possible threats associated with transportation corridors. At the time of the site visit, New Boston Nursing Home expressed concern about the most recently reported sodium level in the well water.

Recommendations:

- ✓ Inspect facility drainage and direct, as is feasible, road runoff away from the wellhead.
- ✓ Raise the wellhead above grade to protect against flooding.
- ✓ Continue monitoring the sodium levels in the water.
- ✓ Contact the Massachusetts Highway Department regarding

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400 foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

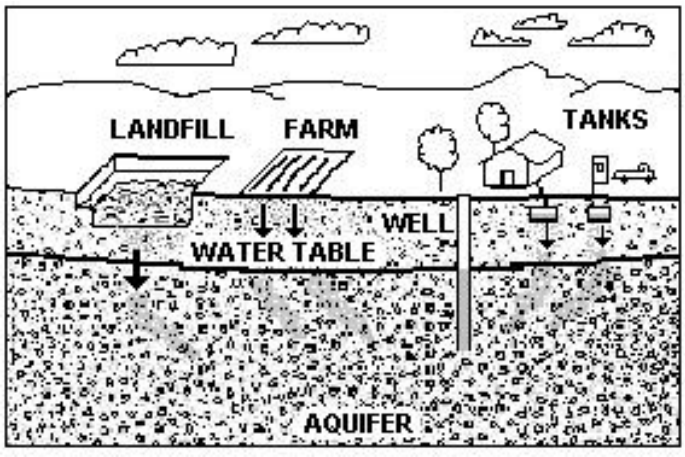

Figure 1: Example of how a well could become contaminated by different land uses and activities.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

For More Information:

Contact Catherine Skiba in DEP's Western Region Office at (413) 755-2119 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at: www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been made available to the public water supplier and town boards.

your concerns, if the sodium concentrations in the well water increase. Request reduced winter road salting near the Zone I.

- ✓ Do not use salt deicers within the Zone I.

5. Improper storage of hazardous household materials – Paints, grout, deicers (calcium chloride), and other hazardous household wastes are stored within the basement of the nursing home.

Recommendations:

- ✓ Store in stable, enclosed cabinets with secondary containment. Items no longer used should be properly discarded during the town's hazardous waste day.
- ✓ Provide secondary containment for storage of potentially hazardous items.

Other issues noted during the site visit were the presence of electrical transformers and floor drains in the boiler room. Electrical transformers contain Mineral Oil Dielectric Fluids (MODF). Although the use of PCBs is banned in new transformers, historically, PCBs were used in some transformers. Contact the local utility to determine if the transformers contain PCBs. If PCBs are present, urge their immediate replacement. Keep the area near the transformers free of tree limbs that could endanger the transformer in a storm.

Floor drains in boiler rooms provide drainage in the event of a plumbing failure. Floor drains in areas that contain hazardous materials must be sealed or discharged to a sanitary sewer or tight tank. The discharge point of the floor drain is unknown but assumed to be the septic system. The floor drain must therefore either be sealed or protected to prevent hazardous materials from discharging through the floor drain. Do not store hazardous materials within the boiler room. The system utilizes propane for fuel. Require your boiler maintenance contractor to protect the floor drain from lubricants and spills especially during maintenance. Boiler blowdown must be disposed of off-site. Please consult the regional UIC coordinator Rick Larson at 413-755-2207. Refer to attached brochures and UIC forms.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the New Boston Nursing Home's well susceptibility to contamination. New Boston Nursing Home is commended for using propane as the fuel source. New Boston Nursing Home should review and adopt the key recommendations above and the following:

Priority Recommendations:

- V Raise the wellhead and replace current spilt well cap with a sanitary, watertight well cap.
- V Consider well relocation if Zone I threats cannot be mitigated.
- V Remove as is feasible all non-water supply activities within he Zone I, or use BMPS.

Zone I:

- V Keep any new non-water supply activities out of the Zone I.
- V Prohibit public access to the well by locking facilities, and posting signs.
- V Conduct regular inspections of the Zone I. Look for illegal dumping, evidence of vandalism; check any above ground tanks for leaks, etc.
- V If the facility and residents intend to continue utilizing the structures in the Zone I, use BMPs and restrict activities that could pose a threat to the water supply.
- V If it's not feasible to purchase privately owned land within the Zone I at this time, consider a conservation restriction that would prohibit potentially threatening activities or a right of first refusal to purchase the property.
- V Redirect road and parking lot drainage in the Zone I away from well.
- V Do not use or store pesticides, fertilizers or road salt within the Zone I.

Training and Education:

- Train staff on proper hazardous material use, disposal, emergency response, and best management practices; include custodial staff, groundskeepers, certified operator, and food preparation staff. Post labels as appropriate on raw materials and hazardous waste.
- Post drinking water protection area signs at key visibility locations, such as at the entrance to the facility.
- Inspect drainage and ensure that stormwater runoff is directed away from the well and treated according to DEP guidance if required.

Facilities Management:

- Implement standard operating procedures regarding proper storage, use and disposal of hazardous materials. To learn more, refer to http://www.state.ma.us/dep/bwp/dhm/files/sqgsum.pdf for the Requirements for Small Quantity Generators.
- Eliminate non-sanitary wastewater discharges to on-site septic systems. Remove hazardous materials from rooms with floor drains that drain to the ground or septic systems.
- Floor drains in areas where hazardous materials or wastes might reach them need to drain to a tight tank, be sealed, or be connected to a sanitary sewer.
- Implement Best Management Practices (BMPs) for the use of fertilizer, herbicides and pesticides on facility property.
- Septic system components should be located, inspected, maintained on a regular basis and upgraded as required.
- Wellheads should terminate above grade and have a surface sanitary seal. Concrete or earthen collars should slope away from wellhead.
- For utility transformers that may contain PCBs, contact the utility to determine if PCBs have been replaced. If PCBs are present, urge their immediate replacement. Keep the area near the transformer free of tree limbs that could endanger the transformer in a storm.

Planning:

- Work with local officials in Sandisfield to include the facility IWPA in Aquifer Protection District Bylaws and to assist you in improving protection.
- Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a land use inventory to assist in setting priorities, focusing inspections, and creating educational activities.

Funding:

The Department's Wellhead Protection Grant Program provides funds to assist public water suppliers in addressing Wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the "Wellhead Protection Grant Program". For additional information, please refer to the attached program fact sheet. Please note: each program year the Department posts a new Request for Response for the Grant program (RFR). On or about May 1 the new RFR is available and the application is due back on or about June 31. Other funding opportunities are described in "Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation" at http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Fact Sheet
- Your Septic System Brochure
- Pesticide Use Fact Sheet
- Industrial Floor Drains Brochure
- Wellhead Protection Grant Program Fact Sheet
- Source Protection Sign Order Form